

CLAIMS

1. A process for manufacturing carbon steel,
5 especially steel strip for packaging, in which:
- a steel having a composition suitable for use as packaging steel is cast in the form of a thin strip from 0.7 to 10 mm in thickness, directly from liquid metal;
 - 10 - an in-line hot rolling operation is carried out on said strip, at the end of which said steel is in the austenitic range;
 - said strip undergoes forced cooling at a rate of 80 to 400°C/s, at the end of which said steel is
15 in the ferritic range;
 - said strip undergoes a cold rolling operation with a reduction ratio of at least 85%; and
 - said strip undergoes an annealing operation.
- 20 2. The process as claimed in claim 1, characterized in that said strip is cast between two internally cooled horizontal rolls rotating in opposite directions.

SUB
25
1/1

3. The process as claimed in claim 1 or 2, characterized in that said hot rolling operation is carried out in a single step with a reduction ratio of at least 20%.

- 30 4. The process as claimed in claim 3, characterized in that said hot rolling operation is carried out in a single step with a reduction ratio of at least 50%.

SUB
35
1/1

5. The process as claimed in claim 1 or 2, characterized in that said hot rolling operation is carried out in two steps, in that the first of these

Printed: 09-11-2001

CLMSPAMD

00964323-FR000259

- 13 -

Cont
Serials
A12

steps is carried out with a reduction ratio of 20 to 70%, in that, after this first step, the strip is reheated so as to make said steel pass from the ferritic range into the austenitic range, and in that the second rolling step is then carried out with a reduction ratio of 10 to 30%, at the end of which second step said steel is in the austenitic range.

6. The process as claimed in claim 5, characterized in that said first step is carried out entirely in the ferritic range of said steel.

7. The process as claimed in claim 5, characterized in that said first step is carried out partly in the austenitic range and partly in the ferritic range of said steel.

8. The process as claimed in claims 1 to 7, characterized in that, after the strip has been cast, it is made to pass through a region in which it is subjected to a nonoxidizing environment.

SUB
A3

9. The process as claimed in one of claims 1 to 8, characterized in that the strip is subjected to a descaling operation before and/or during the hot rolling.

10. The process as claimed in one of claims 1 to 9, characterized in that said forced cooling is carried out at a rate of 100 to 300°C/s.

11. The process as claimed in one of claims 1 to 10, characterized in that said forced cooling starts when the strip is in the ferritic range of said steel.

12. The process as claimed in one of claims 1 to 11,

2

AMENDED SHEET

02-11-2001

Printed: 09-11-2001

CLMSPAMD

00964323-FR000259

- 14 -

characterized in that the strip is coiled at a temperature below 750°C between the forced cooling operation and the cold rolling operation.

5 13. The process as claimed in one of claims 1 to 12,
characterized in that the reduction ratio of the cold
rolling is at least 85%.

10 14. The process as claimed in one of claims 1 to 13,
characterized in that said cold rolling is carried out
in a single step.

Add > A4

Add > A5